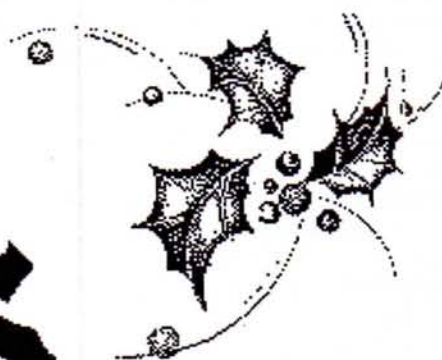# ATARI COMPUTER ENTHUSIASTS

In This Issue:

REVIEWS: ChartPak   BiLog   Shiloh   Spectrum 512
NEWS: Atari at COMDEX   WordPerfect ST Update
ANNOUNCEMENTS: ProTablet ST   WordUp
FEATURES: Expert Programming   Buying Software

Greetings

*Holiday greetings from the whole gang here at A.C.E.*

Bumpas' Reviews

Chartpak ST ($50, Abacus Software) is a high-quality productivity package for making presentation quality charts and graphs. It is fully integrated into the GEM interface. All functions are easily made with the mouse.

You can key in data for the charts. Or, the program will accept ASCII data from spreadsheets or other programs. You need to treat the converted data files with a word processor or text editor to put carriage returns after each item. This is a similar process to that required to put ascii data into a spreadsheet.
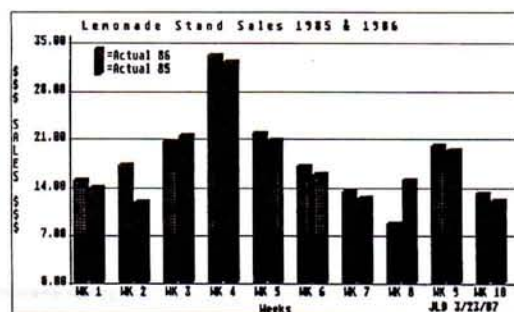

Once you have got the data for the chart, you may select from among line, horizontal and vertical bar charts, and pie charts, including exploded pie-charts (you select the items to explode!). There are 3-D bars, which look better to me than the flat bars. The 3-D effect is minor, though. They appear to be merely shadowed. The pie-charts can be flat, or tilted.
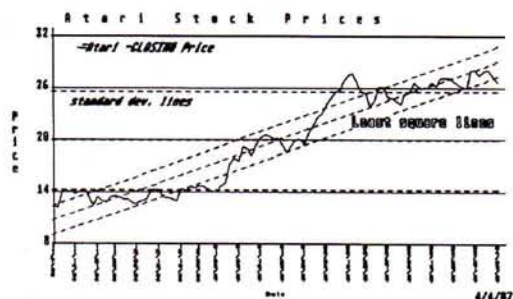
If you alter the data in a data set, the chart is re-painted on the screen very quickly. The calculations in this program are very fast. I did a pie-chart and tilted it. I found it seemed to make a 9% section look smaller than an 8% section. So I'm not too satisfied with the pie-chart function. To shadow a pie-chart takes 10 seconds or so, so it's not fast enough to want to use it while you are fiddling with your data.

One of the greatest things about this program are the analytical tools, including the ability to perform mathematical functions upon the data. The results of these functions and analyses are then displayed just like another data set. You can design your own formulas, or you can use one of the "canned" ones: Averages and Standard Deviations; Least Squares; and Exponential Smoothing.
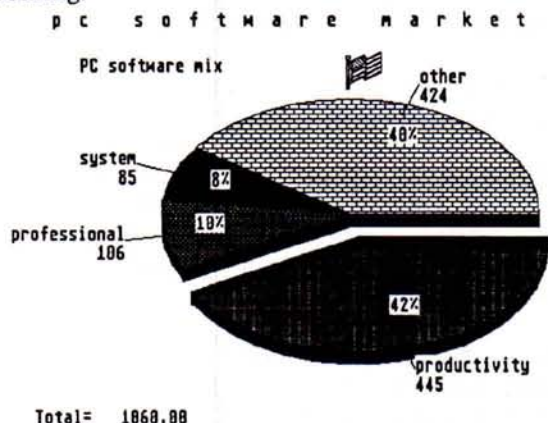
Another fine feature to enhance the presentation value of your product is the program's ability to incorporate clip art onto a chart and to use *DEGAS* pictures as background for charts. All the titles and labels can be dragged around the screen and placed where you want them.

The documentation comes in the 3-ring binder we've come to expect from Abacus. The program is not copy protected and will run in all three resolutions. I've found it helpful already in one or two projects which I've done. If you do much chart making, you'll find this program a welcome addition to your library.

SHILOH ($40 XE) is SSI's fourth in their series of tactical Civil War battles. This one adds at least threee new elements. The Union forces have gunboats which are immune from Confederate attack. Some artillery may now fire "indirect", that is without having a direct line of sight to their target (the gunboats may fire this way). And command control is much more detailed, with more serious effects than in the previous games.

This battle pits a rampant Confederate force pushing back Union forces of twice its size. The second day of the battle usually sees the Union forces regaining some of their lost ground. The whole game can be played in 15 turns. Shortening the number of turns makes the game system more playable.

With all the expanded memory and ram disk usage on the 8-bit Ataris, it will be nice if SSI can find some way to add ram disk support to their games (this is the main improvement I want to see). I'm beginning to play more

column slightly. In *Publishing Partner* the easiest way to feather text is to add an extra point or two between paragraphs. Move the cursor between two paragraphs, select the last line of the paragraph and the line between the paragraphs. Press the "Alternate" and "L" keys simultaneously, then use the up arrow key to add feathering points.

Graphic Decisions
Do not overdo special graphic effects. Aside from risking a display of poor taste, you may run out of patience (and money) for printing or typesetting them.

Large-Caliber bullets
The bullets in the original Apple Laserwriter fonts (Helvetica, Times Roman, and Courier) look rather small, but if you are using a Laserwriter Plus or a QMS PS 800+, you can get heftier bullets from Avant Garde, Century Schoolbook, Bookman, and Palatino. For the best effect always enter a space between the bullet and the word that follows it.

Limited file sizes
When preparing text files for use with *Publishing Partner*, break up large ones into files of less than 32K each so *Publishing Partner* can respond more quickly when you adjust or edit text.

Off-Center Alignment
If you want to center type above a column that is ragged right, gauge the placement by eye. The type always looks as if it is too far to the right if you use the appropriate formatting command, or pad the end with several spaces before centering.

Scaling DEGAS
When you're scaling bit mapped graphics for laser output, the best way to maintain image quality is to scale the graphics in multiples of 75 dots per inch, keeping in mind that *DEGAS* files are 72 dot per inch, the ratios are 96, 48, 32, and 24 percent.

Singular Spaces
Typeset text shouldn't have two spaces after ending punctuation because the gap in type can be unsightly. Before placing files in *Publishing Partner*, search for all pairs of consecutive spaces and replace them with single spaces.

The Large and Small of it
Sharpen your camera-ready copy by laser printing graphics at 200 percent of the final size and then making a photostat at 50 percent. This trick should be restricted to larger type and bolder graphics. Small type can turn muddy and hairlines can disappear in the reduction process.

Yours by Default
If you use a consistent design in *Publishing Partner*, you will save time by changing the program's default settings. Start up the program but do not open a file; then change such settings as measurement system, margins, number of columns, space between columns, spacing, and default type specifications. These settings will apply to all new files.

We wish that articles such as the above remain a continuing feature of the Original ACE Newsletter. To do so we would like you suggestions, hints, and tips. Call the ACE BBS at (503)343-4352 or write to ACE, 3662 Vine Maple Drive, Eugene, OR 97404.

--B.L. Hammerton, A.C.E. Production Manager

A Different ST Mouse

QMI announces a low-cost, high-performance graphics tablet for the Atari ST computers. The *ProTablet ST* replaces the mouse pointer device with an accurate digitizer tablet and a comfortable stylus pen. *ProTablet* works with virtually all programs including *EasyDraw*, *CAD-3D*, *Drawfix*, *DEGAS*, *Publishing Partner* and even the *GEM Desktop*.

The package includes a tablet driver program which lets you scale any portion of the tablet's active area to the full screen display. Also, the tablet may be used for left-handed operation or any other orientation.

The *ProTablet* has a maximum working area of 12.0 x 8.0 inches and has physical dimensions of 17.5 x 11.0 x 1.2 inches. Up to 60 points per second and a resolution of 250 lines per inch gives you smooth and accurate control. Electrostatic coupling between the tablet's grid and pen lets you operate through thick drawings or several sheets of paper for digitizing and tracing. The system includes all cables and hardware for connection to the Atari ST serial port.

Protablet ST is manufactured for QMI by Mitsubishi and is covered by a full six month warranty. Available now and has a suggested retail price of only $395. A larger version of the tablet (13.0 x 16.5 inches) will be available at $595 by the end of 1987. Quantum Microsystems Inc., PO Box 179, Liverpool, NY 13088, (315) 451-7747.

--Product Announcement

you from recalling the document name and retyping it at each save. The in-store test on a program, should go something like this:

- Start up the program and enter data (numbers in a spreadsheet, words in a word processing program, or a data entry form in a data base program).
- Choose the Save as... command.
- Assign a document name (your name or "test," for example) and save the document.
- Make one more entry or edit something in the document currently on the screen.
- Again issue the Save As... command.
- The dialog box should appear with your original file name. If so the program passes the minimum typing test.
- Try to rename the program by first pressing the Escape key then typing a new name. If the old one disappears and the new letters you type appear in the box, the program will probably pass the editing conventions test as well.

Minimum Human Memory Requirement
As long as your using your ST's powers to help reduce your typing, you should expect the ST to help you rely less on your memory. Document names are pieces of information that a program should keep track of for you.

ST software from Atari does a good job of keeping track of document names. When you choose the Open... command from the File menu (from within a program), a dialog box appears on the screen, with a directory of documents that can be opened from the program. To open a document, you just scroll the name into the window and double-click the pointer over it. (You can also select the name and click the OK box, but that takes more mouse movements than necessary.) Be on the lookout for sloppy programming in regards to dialog boxes.

Other Evaluation Tips
Beyond the special requirements for ST software, there are other principles to follow when shopping for software, regardless of the computer or program category. Of particular importance is the software's documentation.

It is difficult to judge a program manual while thumbing through it in a store. On quick perusal, a manual may seem to have everything a good manual should have: screen illustrations, a lengthy reference section for experienced users, and an index. But when a beginner tries to learn to use the program from the manual, there may be gaps and incomplete descriptions of key points. The way to avoid hardships is to pick a particular command and read the entire text from the manual, this way you will be able to tell if the documentation is understandable.

One thing you should search for in the documentation (or on the program disk) is a separate tutorial. The tutorial

should not only lead you step-by-step through the basic operation of the program, but should also provide a real-world example. I understand a program much more quickly when I see precisely how the program works with examples of the kind of work I do.

Another thing to consider when you shop for software is the intuitiveness of the program's operation. Most people want to be able to sit down, turn on the computer, and start using the program without ever opening the manual. If you are familiar with the general category into which the program falls - financial modeling, word processing, data base, or graphics - a truly intuitive program should provide enough information on the screen and in the drop-down menus to lead you right away through a simple application of the program.

When you first try a program, take a moment to look at the opening screen to make sure the visual environment suits the work you intend to do. Next, drop down each menu and study the options. Are they grouped logically according to the name of the menu? Do the options make sense to you in the context of the program? Are they right for the application? Or are they ambiguous?

Select menu items followed by dots (such as Save as..., Open...) to study the dialog boxes the menus call up. Not only should the dialog boxes offer you many choices (including the Cancel option), but the choices should be clearly labeled so you understand them.

Finally, try to work with the program without studying the documentation. You might not get too far, but the further you get, the more intuitive the program's operation will be for you. That means that even after you have studied the documentation, you will be able to find your way out of difficulties by searching for a menu choice, rather than tearing through the manual for help.

Now that ST software is more diverse and plentiful than in it's early days, it is very important for you to be critical and selective in your choices. Put a prospective purchase through its paces on precisely the kind of work you do, whether it be for college coursework or a board of directors presentation. Steer clear from programs that are more show than go. Embrace those that do the job elegantly and productively. The more you demand of software developers, the further they will advance the state of the art of ST programming.

And that's something we will all benefit from.

--B.L. Hammerton, A.C.E. Production Manager

DISK COMMAND   BY   NICHOLAS HIGGS

FROM PAGE 6

DISK COMMAND
By Nicholas Higgs

Disk Command is a set of new comma
nds that you ad to BASIC or ASSEMBLE
R to assist in editing your programs
.

The listing presented here will no
t five you the new commands directly
. You must insert a formatted disk w
ith either DOS 2 or DOS 2.5 (it migh
t work with DOS 3 but I haven't test
ed it) in drive 1 and then run t;e B
Asic program which will produce an A
UTORUN.SYS file. When you re-boot th
e computer (switch on and off) you w
ill now, if you typed the DATA state
ments right(!), find a messaage on y
our screen. The message will say 'ty
pe HELP'. If you wish, typing HELP w
ill display the HELP MENU.

HOW IT WORKS
The machine code program interrupt
s the Get-byte routine of the Screen
 Editor and points it to the Disk Co
mmand routine. This waits until RETU
RN is pressed and then checks the ta
ble of new commands before resuming
its normal routines.

The program protects itself from b
eing overwritten by your programming
by moving up MEMLO (743,744) and st
oring itself beneath it. It also int
errupts DOSINI (12,13) so that when
you press SYSTEM RESET it re-runs. T
he machine code is less that 3K in l
ength and because the commands are t
able driven it shouldn't be very dif
ficult to add extra commands as nexe
ssary.

THE COMMANDS   (COMMAND*OBJECT*FORMAT
)

DIR**Disk Directory**DIR
RENAME**Rename File**RENAME D:oldf

ile,newfile (note the D: in first fi
lename but not in second.)
DELATE**Delate file**DELATE D:file
name.ext
LOCK**Lock file**LOCK D:filename.e
xt
UNLOCK**Unlock file**UNLOCK D:file
name.ext
WRDOS**Write DOS.SYS**WRDOS (You m
ust type Y to prompt if want to writ
e DOS.SYS to Drive D1:. Note DUP.SYS
is not written.)
MEMO**Goto Memo Pad**MEMO (400/800
Users will remember the Note Pad ob
tain by typing BYE. This is similar
to that only screen will turn green
and you use the ESCAPE key to EXIT)
HEX**HEX to DEcimal Conversion **H
EX hhhh (where hhhh is a 4 figure He
xadecimal number between 0000 and FF
FF)
DEC**Decimal to HEX Conversion**DE
C Decnum (where DECnumis any Decimal
number between 0 and 65535)
#FORMAT**Format Disk**#FORMAT (You
need to reply Y to the prompt FORMA
T (Y/N) for safety. The # was used s
o as not get confused with the BASIC
FOR statement)
KILL**Delete Routine**KILL (This c
ommand allows you to type DOS. If yo
u type DOS without typing KILL first
 the System will 'appear' to LOCK UP
. Pressing systemreset woll correct
this then typing DOS again will take
you to DOS. It is better to type KI
LL before typing DOS.)
HELP**Show list of COmmands**HELP
COL**Make Screen colour BLACK** CO
L (Just a personal preference I pref
er the screen black!!)

```
3,32,86,228,140
360 DATA 236,32,96,32,37,32,162,16,1
69,33,157,66,3,169,135,157,68,3,169,
5,157,69,3,169,0
370 DATA 157,74,3,157,75,3,32,86,228
,140,236,32,96,70,79,82,77,65,84,32,
68,73,83,75,32
380 DATA 40,89,47,78,41,155,255,160,
0,185,199,32,153,128,5,200,192,3,208
,245,162,176,160,33,32
390 DATA 1,33,32,113,31,32,168,32,20
1,89,208,35,32,37,32,162,16,169,254,
157,66,3,169,128,157
400 DATA 68,3,169,5,157,69,3,169,0,1
57,74,3,157,75,3,32,86,228,140,236,3
2,96,160,255,140
410 DATA 236,32,96,79,75,32,84,79,32
,87,82,73,84,69,32,68,79,83,46,83,89
,83,32,40,89
420 DATA 47,78,41,155,255,162,10,160
,34,32,1,33,32,113,31,32,168,32,201,
89,208,40,32,37,32
430 DATA 162,16,169,189,157,68,3,169
,32,157,69,3,169,0,157,75,3,169,8,15
7,74,3,169,3,157
440 DATA 66,3,32,86,228,140,236,32,3
2,37,32,96,160,255,140,236,32,96,160
,255,140,236,32,160,0
450 DATA 185,132,5,32,189,34,153,132
,5,200,192,4,208,242,24,173,132,5,10
,10,10,10,109,133,5
460 DATA 133,213,24,173,134,5,10,10,
10,10,109,135,5,133,212,32,170,217,3
2,230,216,160,0,140,235
470 DATA 32,172,235,32,185,128,5,200
,140,235,32,201,127,176,6,32,168,32,
76,158,34,41,127,32,168
480 DATA 32,169,155,32,168,32,96,201
,64,144,8,201,71,176,16,56,233,55,96
,201,47,144,8,201,58
490 DATA 176,4,56,233,48,96,162,223,
160,34,32,1,33,104,104,96,78,79,84,3
2,65,32,52,32,70
500 DATA 73,71,32,72,69,88,32,78,85,
77,66,69,82,155,255,160,255,140,236,
32,169,0,133,242,133
510 DATA 212,133,213,169,5,133,244,1
69,132,133,243,32,0,216,32,210,217,1
65,213,32,34,35,165,212,32
520 DATA 34,35,169,155,32,168,32,96,
24,141,233,32,41,15,141,79,35,173,23
3,32,41,240,106,106,106
530 DATA 106,24,32,63,35,173,79,35,3
```

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2,63,35,96,201,10,144,6,24,105,55,76
,168,32,24,105,48
540 DATA 76,168,32,0,169,32,160,0,15
3,128,5,200,192,127,208,248,96,173,2
36,32,16,104,201,255,208
550 DATA 1,96,201,128,208,7,162,124,
160,38,76,231,35,201,130,208,7,162,1
49,160,38,76,231,35,201
560 DATA 132,208,7,162,174,160,38,76
,231,35,201,136,208,7,162,206,160,38
,76,231,35,201,170,208,7
570 DATA 162,101,160,39,76,231,35,20
1,138,208,7,162,233,160,38,76,231,35
,201,140,208,7,162,6,160
580 DATA 39,76,231,35,201,143,208,7,
162,6,160,39,76,231,35,201,162,208,1
0,162,46,160,39,76,231
590 DATA 35,76,235,35,201,165,208,7,
162,63,160,39,76,231,35,201,167,208,
7,162,82,160,39,76,231
600 DATA 35,162,115,160,38,32,1,33,9
6,162,102,160,38,32,1,33,96,125,32,3
2,32,32,32,32
610 DATA 32,32,32,80,97,103,101,32,5
4,32,77,69,77,79,32,80,97,100,46,155
,255,173,198,2,141
620 DATA 45,36,169,212,141,198,2,162
,243,160,35,32,1,33,32,113,31,32,168
,32,201,27,208,246,169
630 DATA 0,141,198,2,169,125,32,168,
32,32,168,32,160,255,140,236,32,96,1
62,173,160,36,32,1,33
640 DATA 162,88,160,37,32,1,33,162,8
,160,38,32,1,33,173,255,175,201,191,
208,15,162,77,160,38
650 DATA 32,1,33,32,113,31,169,125,3
2,168,32,169,255,141,236,32,96,125,2
9,68,73,83,75,32,67
660 DATA 79,77,77,65,78,68,83,155,32
,32,32,66,121,32,78,73,67,75,32,72,7
3,71,71,83,155
670 DATA 32,32,32,102,111,114,32,80,
97,103,101,32,54,155,32,32,32,116,12
1,112,101,32,72,69,76
680 DATA 80,155,255,125,32,32,32,32,
32,32,32,32,32,32,32,32,200,197,204,
208,160,205,197,206,213
690 DATA 155,68,73,82,32,32,32,32,32
,32,32,32,32,32,32,32,32,32,32,32,32
,32,45,68,73
700 DATA 83,75,32,68,73,82,69,67,84,
79,82,89,155,29,82,69,78,65,77,69,32
,68,58,70,73
```

and Glossery--character sets, conversion programs, definations and error messages. Also there is a catlog of other Abacus products.

Overall, ST for Beginners explains in more understandable details and with more pictures than the ST Owner manual. This book is an excellent head start for the first-time computer users who never have owed a computer of any brand before. It makes an excellent reference guide.

The chapter on windows is excellent. It made windows a piece of cake before we even decided to purchase our own ST. There is even a section on what you can add to your ST (like a hard disk, MIDI, etc.).

This book would make an excellent Christmas gift to go with that ATARI ST present.

--Nora Young, A.C.E. Librarian

Spectrum 512

First of all, I'm sorry I agreed to do this review. I usually enjoy writing reviews but I'm not enjoying this at all. I'd much rather be using *Spectrum 512* than writing about it. And you! Why are you wasting your time reading this when you could be using *Spectrum 512*? The only answer I can think of is that you don't yet own *Spectrum 512*! "But"!, you say. "It's just another drawing program"! Nope! Ain't so! This program is another world. I'm not going to describe all the features of *Spectrum 512*. If you want to know what *Spectrum 512* will do, read the two page ad in the Antic catalog. There's no point in me repeating the ad. But briefly...

You are probably aware that the ST series is capable of displaying four colors in Medium-res and a wopping sixteen colors in low-res. Some of us have noticed that the color selection box in Atari's Neochrome displays over two hundred colors but only sixteen are available at any one time in your picture. This is due to the physical limitations in the design of the ST. Sixteen colors at a time! Well, Trio Engineering, Inc.'s Boris Tsikanovsky must not have read the ST's specs because he went ahead and wrote a paint program that allows you to use all 512 colors in your picture. "Boris! You can't do that"!!! But Boris did it, and I'll tell you how... I don't know. But I do know this. You really do get all those colors, crystal clear, no flickering, no blinking. Not only that but they are very easy to select. All the colors are displayed in groups decreasing in intensity and, as you pass the mouse pointer over them, the 3 digit color values are displayed and the borders change to the color pointed at. This 512

visable and, not only can you choose from the palette, you can point to any color in your picture to re-select it. You can also select a color from your picture without displaying any palette by just pointing at the color and doing a ([Control]-right-click). This selection from your picture is quite valuable because with 512 colors, many of them look the same. Unfortunately, some look exactly the same. This is due to limits in the monitor, not in the program. The same problem occurs with any ST color program. The program can't display what the monitor can't display and color seperation and brightness differ between individual monitors.

Spectrum 512 has all the usual drawing tools; pens, brushes, spray, polygons, circles, ellipses, fills, patterns, undo, etc., but you really have to see for yourself what it does with them. Describing round, really round, circles and smooth lines, color tones. Custom pallets can be saved and any or all custom pallets can be saved and blending and blurring lines just doesn't do them justice. How about taking 30 seconds to build a custom palette with all the rainbow colors blended or a palette with all the flesh tones Custom palettes can be saved and any custom palette, or all custom palettes, can be loaded and used in any picture. Block functions include cut and paste, re-size, change length & width, flip and rotate. You can save 12 full screen blocks at one time on a 1-meg ST. You can paint using patterns and the patterns can be synchronized or un-synchronized. In synchronized mode, there is no overlap. They fit together as a continuous pattern. You can overlay different patterns and create your own by just clicking on a portion of the screen that contains the pattern or drawing you want. There's more. How about magnify while using any of the other options. There is the smoothest airbrush I've seen including four sizes brushes and nine densities. There's slow fill, fast fill, nine adjustments on smoothing, blurring and averaging.

One very important point... On other paint programs, when you copy a block from picture into another, you may lose the palette and colors of one picture since only sixteen are available. Not so with *Spectrum 512*. Remember, every picture has all the same colors available, (all 512 colors), so each block pulled in keeps its original colors. There may be some slight change since only 48 colors are available on any one scan line.

NeoChrome, DEGAS Lo-Res and IFF can be loaded into *Spectrum 512* but only *Spectrum 512* format can be saved. There is a program included to convert *Spectrum 512* format to *DEGAS*.

I want to go back and use *Spectrum 512* but first I have some complaints. It wouldn't hurt to include an index in the manual. *Spectrum 512* has so many features that it's

WordUp

Announcing *WordUp*, the new standard of word processing on the Atari ST. *WordUp* is the first in a series of superior products that Neotron Engineering (soon to be Neotron Inc.) will be bringing to the ST. *WordUp* reflects the philosophy of a company committed to producing low cost applications that utilize the potential of the ST to make high end tasks easier and more efficient.

WordUp is a full GEM application with multiple windows, desk top icons and all menu selections available from the keyboard (and yes it does work with Thunder!-copyright 1986 Batteries Included-in its as you type mode and on files that are saved as ascii). *WordUp* supports any combination of character sizes, faces and styles on the same line. *WordUp* automatically reformats after any action including automatically spacing the line for font size changes, superscript, subscript and word wrap. *WordUp* is the first ST word processor that allows a graphic image and text on the same line. Additionally, text automatically flows around the image, and, since the picture is anchored to the surrounding text, it will follow the text during editing-unlike most page metaphoric desktop publishers. This brings up a point as to why we choose to identify *WordUp* as a word processor even though it possesses many of the features of a desktop publisher. Perhaps, we should call it a document processor since it facilitates the composition and layout of multiple page documents with it's powerful formatting capabilities while not limiting the integration of images and quality of output inherent in desktop publishing.

Through combination of access to the upper portion of the character sets (which contain foreign, scientific and various symbols) and the variable super/subscript feature, mathematical formatting is possible. Tables and columns of text and graphics are easily set up and maintained with the left, right, center and decimal tab ability. Another first, is user selected symbol or automatically numbered footnotes that appear just as they will print at the bottom of the page; thus allowing, as you might guess, full font and line alignment capability (left, centered and justified) along with seeing the relationship of the footnotes to the body text as you type.

I can see that we are getting a little ahead of the ball game here; do not let us forget the ability to apply all formatting options to a paragraph, defined section or document separately and in combination. For example, line spacing which is adjusted in minimum increments of a point($1/72$ in) is specified for the three with the sum being the actual spacing. This capability is applicable to most formatting features including top, bottom, left and right margins; thus, facilitating easy global or chapter(section) changes without altering paragraph indents etc.. Line alignment can be flush left, centered or justified, and, remember, everything is what-you-see-is--what-you-get as you type (no more preview and cumbersome reformatting necessary).

WordUp uses GDOS to output to the printer and the screen. Thus, any third party GDOS compatible printer drivers and/or fonts should work with *WordUp*. *WordUp* will ship with, as a minimum, three faces (Swiss-serif type, Dutch-sans serif type and Typewriter-monospaced courier type) in 10, 12, 18 and 24 point for the proportional faces and Epson FX-80 compatible, Star Micronics NB24-10 compatible and Atari SMM804 printer drivers. This should cover most popular 9-pin and 24-pin dot matrix printers; however, we are working on more fonts (a font editor) and printer drivers- especially for laser printers. Don't forget that Atari's soon to be released laser printer will run GDOS.

As you can probably gather, *WordUp* has far too many features to describe in detail here. As a result, we will be sending demos to all dealers on our mailing list in the third week of September. If your local dealer does not have one at that time then have that dealer contact us. *WordUp* will ship to dealers in the third week of October. More information can be obtained directly from Neotron Engineering, 908 Camino dos Rios, Thousand Oaks, CA 91360, USA or (805)498-3840.

To all of STdom, we hope you like WordUp as much as we do, and, remember, that we want to be a responsive company-so please leave suggestions and comments online or write us (the old way).

--Shelby Moore, President-Neotron Engineering

```
 4 field type byte
 5 field data length
 6 field mask length
 7 field special offset (low 8 bits)
 8 field data offset (low 8 bits)
 9 field data offset (high 3 bits) field
   special offset (high 5 bits)
10 field decimal position
```

The first two bytes simply give the row and column position of the start of the field name. The screen is 80 columns by 21 lines and 0,0 is the upper left hand corner.

The field name is actually stored in the second data table. The low 11 bits of this 16 bit entry are the offset to the field name in the Name table. The high 5 bits are the field name length.

The low four bits of the field type entry, identify the field type. The high bit of the field type is a flag for the justification of the field, if it is set the field is right justified. There are eleven field types in *SynFile+*, each has a number associated with it. They are:

```
ID number Field Type
 0 ASCII field
 1 floating point
 2 cumulative computed
 3 table look-up
 4 dollar
 5 record number
 6 date
 7 integer
 8 counter
 9 conditional
10 computed
```

The field data length, is the length of the data stored to the disk record. For ASCII fields it is one greater than the field mask length. For floating point, cumulative, dollar and computed fields it is 6 bytes. For table look-up and conditional fields it is one byte. All other fields have a data length of 2 bytes.

The field mask length is the length of the mask (underlines) for the characters respectively.

The special offset is 13 bits spit between bytes 7 and 9. Byte 7 has the low 8 bits of data, and the high 5 the Special data table. It is used by computed, cumulative, conditional and table look-up fields. The counter field also use this entry, but not as a pointer. Counter fields use it as the increment for the field.

The field offset is 11 bits long. The low 8 bits are stored in byte 8, and the high 3 bits are stored in the low 3 bits of byte 9. This is the offset from the start of the record to the start of the data for this field.

The field decimal position is just that. It tells *SynFile* how to display floating point numbers. The current version of *SynFile* only uses the low 4 bits of this byte.

The others are reserved for future use. If the value of this byte is 15 the field will be displayed in floating point, which is however the Atari FP ROM formats the number. For any other value, SynFile will force the display of a decimal point and N digits to the right of the decimal.

The Name Table
The Name table contains all the field names. Each field name is stored as a text entry, with no delimiters or seperaters between entries. The names MAY not be stored in the same order as the fields entries in the Definitions table (this may occur if the form is edited in the CREATE module of *SynFile*.)

The Special Data Table
The Special Data table contains all formulas and table look-up field data.

Formulas
Formulas for computed, cumulative, and conditional fields are stored as a sequence of command tokens. The CREATE module parses the user entered formula, and converts it to a tokenized RPN formula. As retrieved all commands use the top 1 or 2 entries from the stack, and leave ren All field and numeric references push the data onto the top of the stack. If the high bit of a token is set, then the field referenced is an interger (16 bit data) field, a FLOAT will automatically be executed on the field when the data is retrieved. The command tokens are:

```
Token value Command
  0 + (add the top two values)
  1 - (subtract the top value from second
  value)
  2 *
  3 /
  4 LOG (take the natural LOG of top number)
  5 LOG10 (take the common log of top number)
  6 EXP
  7 EXP10
  8 ABS
  9 SQRT
 20 numeric constant
 30 = (set true flag if top 2 entries are
  equal)
 31 >
 32 <
 33 <> (not equals)
 34 >=
 35 <=
126 current date
127 END (end of formula flag)
```

Numeric constants (20) are stored as 6 byte internal floating point representations of the number. Entries 30 to 35 are used to compare 2 numbers on the stack for use in conditional operations.

To intrepret a computed field, use the special data offset to set a pointer to the formula. The retrieve tokens one byte a time until the END token is found. The value on the top of the stack at that time is the result of the

The only way to pack a program with the complexity of Flight Simulator II of Jet into the limited memory of these machines is to write it in assembly language so that every byte can be accounted for. Sometimes ecen this is not enough, and we must resort to using overlay techniques to provide for larger programs.

For program development, we use a cross-assembler/debugger system developed in-house. This allows us maximum performance and flexiblity. For example, for 68000 program development (for the Macintosh, Amiga, and Atari ST computers) we have an assembler running on a fast 80286 MS-DOS machine that assembles the 68000 code. Assembled and linked code is then sent over a fast serial link to the targer machine. We use a second MS-DOS machine running an interactive debugger to trace the cod and examine memory and registers. Typical turnaround time for one or two files (time form beginning the assembly to running the program) is under one minute. Building (assembling and linking) the entire Flight Simulator program takes about three minutes.

Speed of program execution is also a major concern for us. A program written in assembly language will be anywhere from 2 to 100 times as fast as its high-level language equivalent. While it's true that the algorithms are more important than the language in which they are ivpleminted, an assembly language algorithm will always be faster than its high-level counterpart. In addition, high-level languages often do not provide the control structure flexibility needed to program efficient algorithms.

The currnt trend in the microcomputer software industry is to rely on high-level languages for most program development. Some people even argue that there is no need to use assembly language on the newer 16-bit machines. We don't agree. As new computers continue to offer more memory and increased performance capabilities, we try to increase the capabilities of our programs to match. Compare our very first Flight Simulator program (created in 1979 for the original Apple II computer) with FS2 on the Commodore Amiga or the Atari ST. Our philosophy has always been to push the capabilities of personal computers to their limits (and beyond), rather than to trade product quality for programmer convenience. This means programming in assembly language.

Program speed is essential to our products because most of out graphics are rendered in true three-dimensional perspective. This means that all of th 3D objects in our programs must go through complex mrathematical transformations to allow them to be viewed form any position in space at any viewing angle. In essence, this means doing nine separate multoplications for each point on every object for every screen update. This can take quite a long time on computers without hardware multiplication capabilities. Because of this. we've developed techniques to reduce or sometimes even eliminate altogether the number of multiplications performed for some points.

Many programs on the market claim to have "3D graphics". Frequently, this means only that there are several different pre-drawn sizes of each shape. While this technique can sometimes provide a convincing illusion of depth and 3D motion, it doesn't allow you to do things like fly around an object and view all its sides as you circle it. True 3D graphics also allow useful features such as multiple viewing directions, multiple variable-sized windows, and the ability to zoom in or out. The only way to create a realistic flight experience is to depict scenery with 100% visual accuracy form any viewing angle. This is why, for instance, runway landing approaches seem so realistic in Flight Simulator II. We are continuing to experiment with new 2D and 3D graphic techniques, and will continue to provide the most exciting and realistic graphics possible.

Note: This article was included to show how a professional company develops professional quality software.

--Chris Green and Matt Toschlog, SubLOGIC authors

Dear Daisy-Dot Enthusiast,

Confusion has recently arisen regarding a program called "Daisy-Dot II" by "The Cryptic Wizard," or any of the several aliases he uses. In response to a couple of letters I received from this individual, letters full of insults and false statements, I would like to set the facts straight.

He maintains that I had been notified (not by himself, but by a "third party," as he says) of his plans several times before releasing his program and that I was asked to comment on a pre-release version. Contrary to these ridiculous claims, I was never contacted regarding this program, until I received it, with no requests for comments, at about the same time it was available to everyone.

Mr. Wizard's use of the name "Daisy-Dot II" infringes on my rights toward the creation of derivative software based on my original work. Additionally, inclusion of the phrase "Daisy-Dot," which I had originally created, wrongly implies my involvement in the development of this program. The real *Daisy-Dot II* is currently under development and should be available around the end of 1987 with a myriad of new features.

Note: The real *Daisy-Dot* program is available from the A.C.E. librarian, Nora Young, 105 Hansen Lane, Eugene, OR, 97404, please send $1.00 for an updated library list.

--Roy Goldman, Daisy-Dot author